

MISSOURI DEPARTMENT OF CONSERVATION



February/March 2013

# Xplore

adventures in nature



**TRANSFORMERS**

SOME CRITTERS ARE MORE THAN MEETS THE EYE

# ON THE COVER



**GREAT HORNED  
OWL CHICK**  
by Noppadol Paothong

## 6 Transformers

Some critters are more than meets the eye.

## 9 Awesome Opossums

Despite their bad rap, opossums are actually awesome.

## DEPARTMENTS

- 1 What Is It?
- 2 You Discover
- 4 Predator vs. Prey
- 5 How To
- 14 Wild Jobs
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Cottontail rabbit

## ON THE WEB

Visit [xplormo.org](http://xplormo.org) for cool videos, sounds, photos, fun facts and more!



# Xplor

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David Besenger  
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Mark Raithel  
Laura Scheuler  
Matt Seek  
Tim Smith  
David Stonner  
Nichole LeClair Terrill  
Stephanie Thurber  
Cliff White

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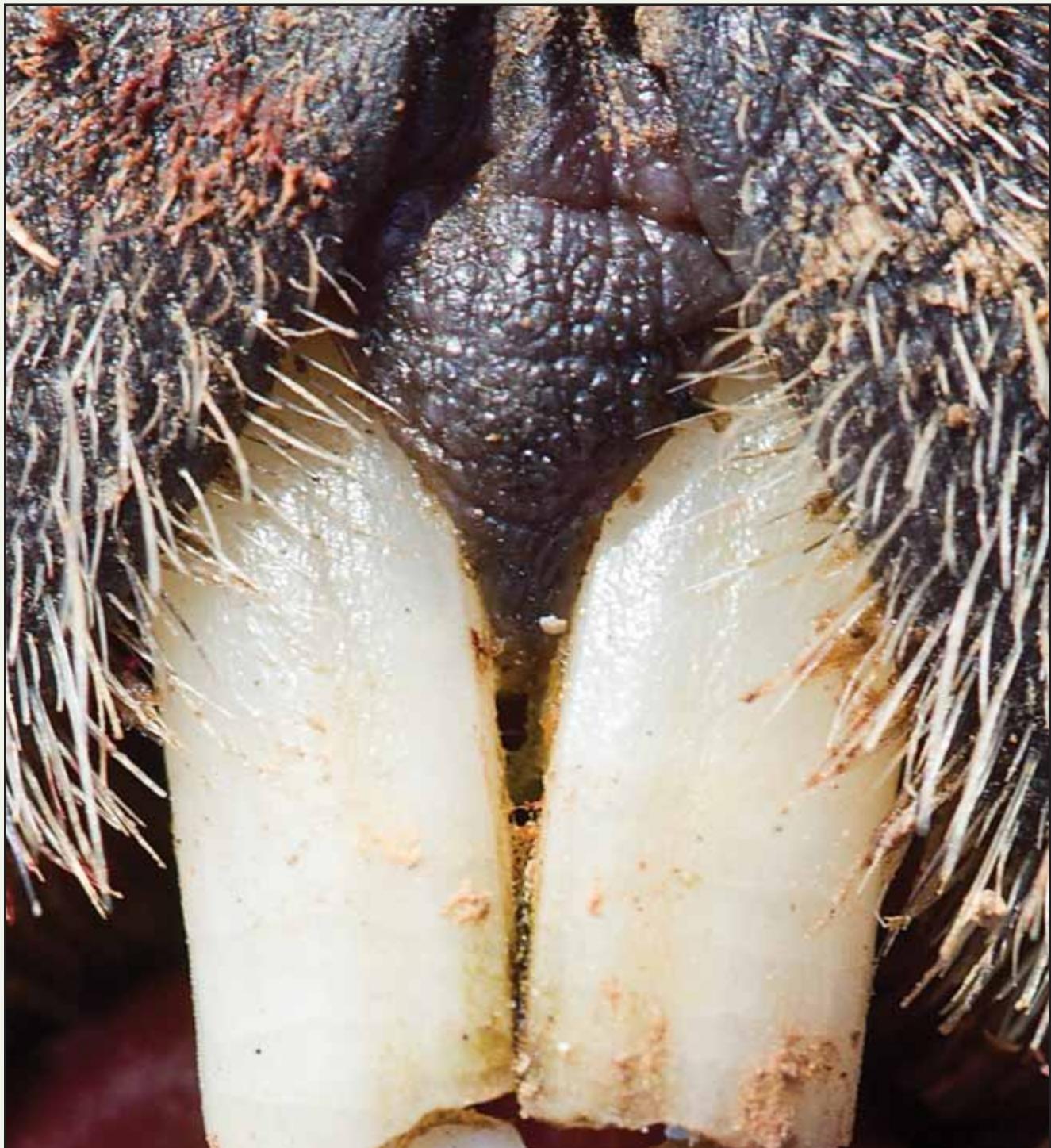
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# WHAT IS IT?

DON'T KNOW?

Jump to the back cover to find out.



- ① I'm what you call a heavy sleeper.
- ② My ticker ticks slower when the weather turns colder.

- ③ I'm Missouri's furriest forecaster.
- ④ Whistle if you know my name.

# you discover

Coax a branch to **BLOOM**.

Has winter left you in a funk? Then bring the bling of spring inside. Clip a few redbud, dogwood, or serviceberry branches. Smash the bottom inch or two of each one with a hammer, then place the branches in a jar of warm water. Set the jar in a cool, dimly lit room away from bright windows. Add fresh water every other day, and in a few weeks you'll have the first sweet blooms of spring.



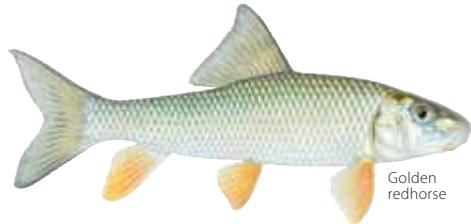
## Prevent a CRASH LANDING.



As many as a billion birds die each year when they crash into windows.

Glass is invisible to birds, and it often reflects trees or clouds, causing birds to fly directly into it. Most collisions occur in spring when birds migrate, but it's easy to prevent crashes. Just paint a picture on the outside of your windows. Use washable tempera paint, which is long-lasting but comes off with a damp sponge and some elbow grease. Just don't forget to get a parent's permission, first!

## Grab a SUCKER.



Golden redhorse

Sucker-grabbing season opens March 15. To an Ozark angler, suckers are tasty fish with suction-cup mouths, and grabbing means snagging fish using an unbaited hook. If you'd like to give it a go, tie a heavy weight to your fishing line, then tie a large treble hook below that. Wrap the weight in bright duct tape so you can see it underwater. Cast the contraption into a school of suckers. When one swims between your weight and the hook, jerk the rod and hang on.

Golden redhorse illustration by Joseph Tomelleri

## Dont miss the chance to Discover Nature at

Get nose to beak with America's national emblem at **EAGLE DAYS**. Mingo National Wildlife Refuge, Puxico February 2, 9 a.m.–4 p.m. For info, visit [mdc.mo.gov/node/16598](http://mdc.mo.gov/node/16598).



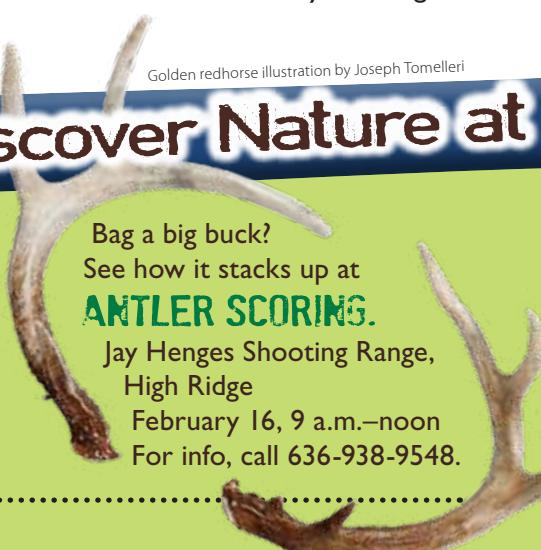
Bald eagle

Taste nature at its sweetest. Go **MAPLE SUGARING**. Burr Oak Woods Conservation Nature Center, Blue Springs March 2, 1–3 p.m. Register at 816-228-3766.



Maple syrup

Bag a big buck! See how it stacks up at **ANTLER SCORING**. Jay Henges Shooting Range, High Ridge February 16, 9 a.m.–noon For info, call 636-938-9548.





## MAKE WILD VALENTINES.

Nature abounds with heart-shaped objects: redbud leaves, a barn owl's face, the wings of a butterfly held just so, a deer's half-melted hoof print in the snow, a perfectly shaped cloud. So, grab a camera and hit the trail to see how many heart-shaped things you can photograph. When you get home, print your favorite photos, fold them into a Valentine's Day card, and write on the inside, "I'm wild about you."

## Befriend a CROW.

a crow in your yard, gently toss it a few shelled, unsalted peanuts. After doing this for few weeks, local crows will learn you're a friendly meal ticket, and come see you whenever you're outside.

## these fun events.

Celebrate Missouri's furriest weather forecaster at

### GROUNDHOG DAY.

Runge Conservation Nature Center, Jefferson City  
February 2, 10 a.m.–2 p.m.  
For info, call 573-526-5544.



Groundhog

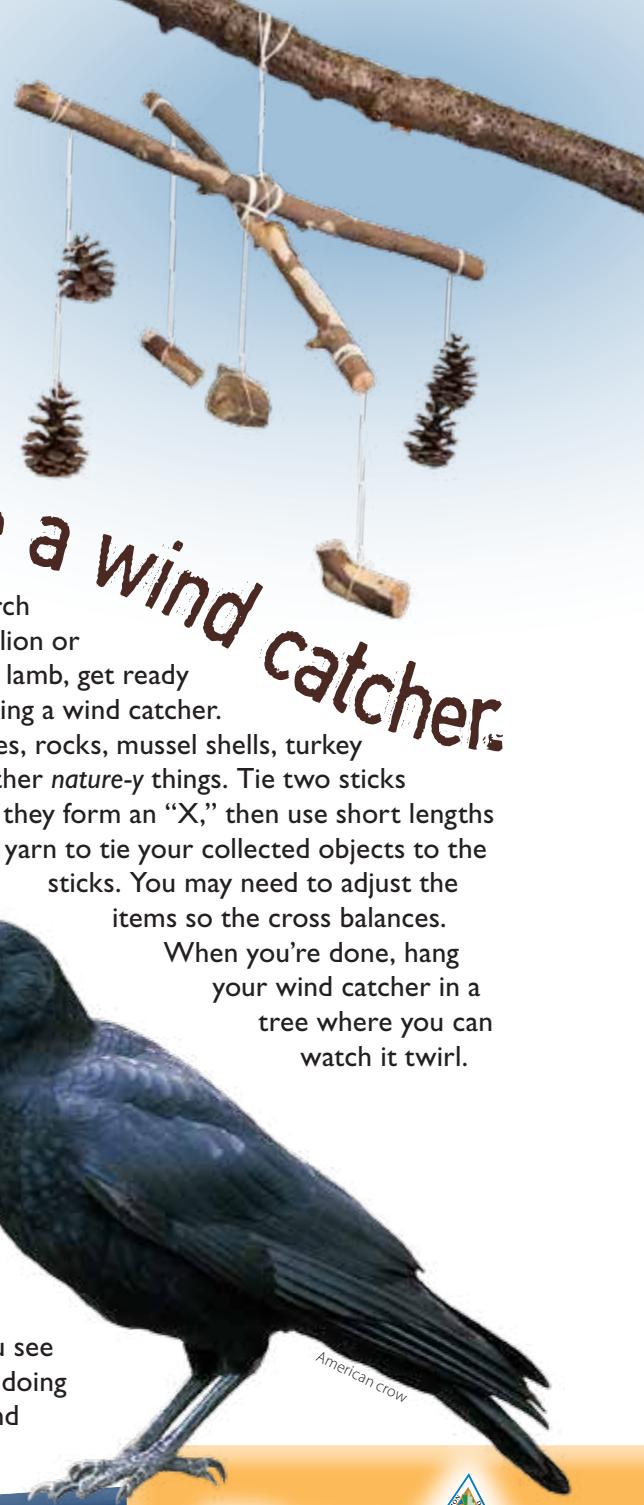
Learn about nature's trash collectors at the

### VULTURE VENTURE.

Shepherd of the Hills  
Fish Hatchery, Branson  
February 16,  
noon–5 p.m.  
For info, call  
417-334-4865, ext. 0.



Turkey vulture



## Make a *wind catcher*.

Whether March roars in like a lion or tiptoes in like a lamb, get ready for wind by making a wind catcher.

Gather pine cones, rocks, mussel shells, turkey feathers, and other *nature-y* things. Tie two sticks together so they form an "X," then use short lengths of yarn to tie your collected objects to the sticks. You may need to adjust the items so the cross balances.

When you're done, hang your wind catcher in a tree where you can watch it twirl.



American crow

MDC



DISCOVER  
nature

Looking for more ways to have fun outside? Find out about Discover Nature programs in your area at [xplormo.org/node/2616](http://xplormo.org/node/2616).

# PREDATOR VS PREY

The struggle to survive isn't always a fair fight. Here's what separates nature's winners from its losers.

Illustration by David Besenger

## Stretchy Neck

More than half a green heron's length comes from its oversized neck. In a flash, a heron can outstretch its neck to grab or stab a fish using its spear-like beak.

## Swim Goggles

Heron's have a transparent third eyelid, called a nictitating membrane, that protects their eyes underwater.

## Lure User

Green herons use bait — such as insects, feathers, or twigs — to lure jittery fish into striking range.

## Super Sight

A bluegill can see objects smaller than dust specks from 17 inches away. Spotting something as large as a heron isn't a problem.

## Sleek Blue Streak

A bluegill's skinny body is built to slice swiftly through water and weave around vegetation.

**AND THE WINNER IS...**

This one's a tossup. Green herons only catch about half the fish they go after. But if the bluegill takes the bait, it's likely to become sushi.

Keep a bug-out bag always packed, and you'll be able to get your hide outside with a moment's notice. Never head off on an adventure without the items shown in **bold**. They'll keep you healthy and safe if you get lost or have an accident. Items shown in plain type will make exploring more fun, but they aren't essential.

### HERE'S WHAT TO PACK



# How To

## Pack a BUG-OUT Bag

### NOT SHOWN, BUT GOOD TO HAVE

- > Raincoat
- > Sunscreen
- > Extra jacket (if it's cold)
- > Hat



# TRANSFORMERS

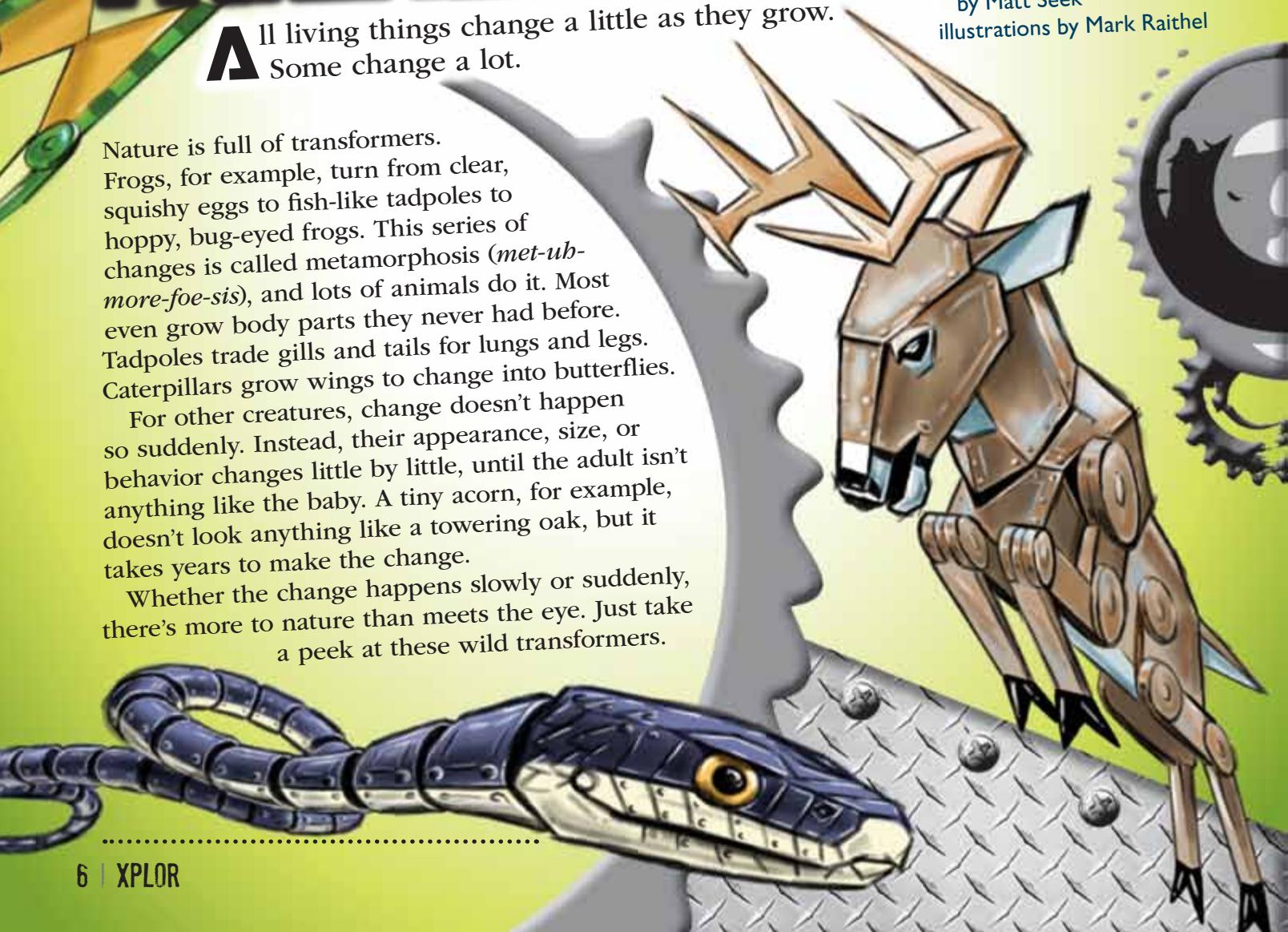
All living things change a little as they grow.  
Some change a lot.

by Matt Seek  
illustrations by Mark Raithel

Nature is full of transformers. Frogs, for example, turn from clear, squishy eggs to fish-like tadpoles to hoppy, bug-eyed frogs. This series of changes is called metamorphosis (*met-uh-more-foe-sis*), and lots of animals do it. Most even grow body parts they never had before. Tadpoles trade gills and tails for lungs and legs. Caterpillars grow wings to change into butterflies.

For other creatures, change doesn't happen so suddenly. Instead, their appearance, size, or behavior changes little by little, until the adult isn't anything like the baby. A tiny acorn, for example, doesn't look anything like a towering oak, but it takes years to make the change.

Whether the change happens slowly or suddenly, there's more to nature than meets the eye. Just take a peek at these wild transformers.



## NIGHT NINJA

(GREAT HORNED OWL)

- Owls use super-sharp hearing to pinpoint prey. Their ears are so keen, they can hear a mouse squeak from 900 feet away.
- An owl's feathers are soft and fringed, allowing for eerily silent flight. Prey doesn't hear a thing until it's too late.
- Great horned owls are armed with dagger-sharp talons that can crush the spine of animals as large as skunks.



## FLICKER

(FIREFLY)

- A firefly's blood contains chemicals that make it distasteful or even toxic to many predators.
- A firefly's flashing fanny produces virtually no heat. In contrast, a light bulb emits 90 percent of its energy as heat.
- There are many kinds of fireflies. Each uses a specific pattern of flashes to attract a mate of the same species.



## O.A.K. (OLD AWESOME KREATURE)

(OAK TREE)

- Some oaks can live to be more than 400 years old.
- Oaks, like all plants, turn sunlight, water, and air into roots, stems, and leaves.
- Missouri's most massive oak grows near Columbia and is 90 feet tall with a trunk nearly 8 feet wide.



## BIG SQUEEZE

(BLACK RAT SNAKE)

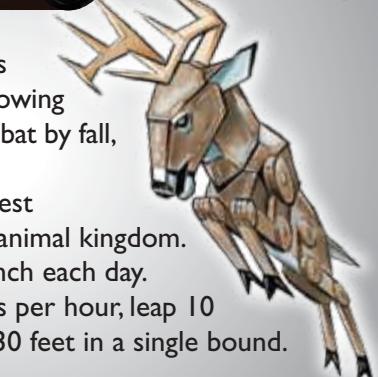
- A rat snake tightens its coils around prey until its victim can no longer breathe. The snake doesn't stop squeezing until it feels its prey's heart stop beating.
- When threatened, rat snakes vibrate their tails in dead leaves, making a buzz similar to a rattlesnake.
- Rat snakes are arboreal (are-bore-ee-uhl), which means they can slither up trees.



## BATTLE BUCK

(WHITE-TAILED DEER)

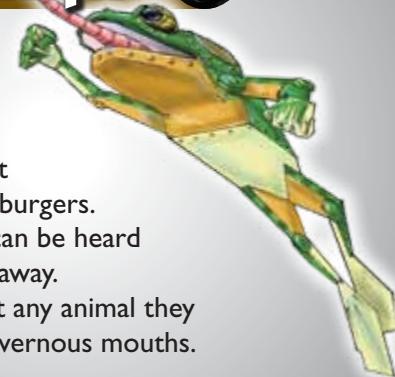
- Male deer grow new antlers every year. Antlers start growing in spring, are ready for combat by fall, and drop off in late winter.
- Antlers are among the fastest growing body parts in the animal kingdom. At times, antlers grow an inch each day.
- Whitetails can run 30 miles per hour, leap 10 feet high, and jump nearly 30 feet in a single bound.



## MIGHTY MOUTH

(BULLFROG)

- The bullfrog is North America's largest frog and can weigh as much as eight quarter-pound cheeseburgers.
- A male bullfrog's call can be heard more than half a mile away.
- Adult bullfrogs will eat any animal they can cram into their cavernous mouths.



## TURBO TIGER

(TIGER BEETLE)

- If a tiger beetle were human-sized, it could run more than 200 miles per hour!
- Tiger beetles are equipped with nightmarish jaws that they use to capture prey and tear it to shreds.
- Tiger beetles spit on their prey. The saliva begins to turn the prey to goo before it even reaches the beetle's mouth.



## SPIKE

(HICKORY HORNED DEVIL OR REGAL MOTH CATERPILLAR)

- Regal moth caterpillars, called hickory horned devils, can grow nearly as big as a hot dog.
- Although they look ferocious, a hickory horned devil's spines can't sting.
- Adult regal moths don't have mouths and cannot eat. Their only goal is to mate and lay eggs.





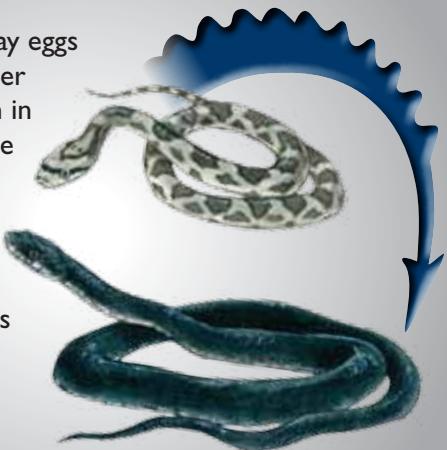
Female **fireflies** lay eggs in damp soil. The eggs hatch into larvae, called glowworms. Glowworms follow slime trails left by earthworms, slugs, and snails then eat them. The larvae spend winter underground and emerge in spring to change into adult fireflies. Adults live only a few weeks.



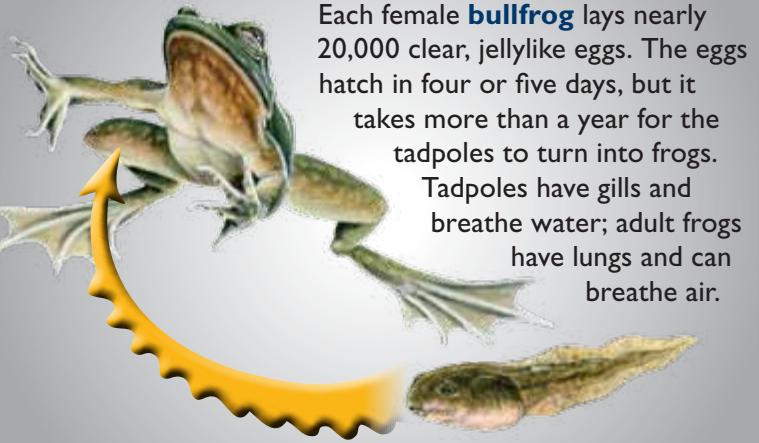
Adult **owls** are fearsome predators, but baby owls are helpless balls of fluff. At hatching, newborn owls are naked and can't open their eyes. It takes eight days for the babies to grow fluffy gray feathers and nearly seven weeks before they can fly.



Female **rat snakes** lay eggs in rotten logs or under rocks. The eggs hatch in about 70 days, but the footlong baby snakes don't look like adults. They're grayish brown with dark blotches. It takes a year or two for the blotchy babies to turn jet black.

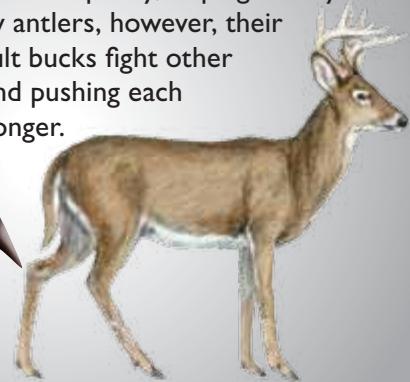


A large **oak** can produce more than 10,000 acorns in a year. Most acorns get eaten by animals, but a few are buried by squirrels and blue jays then forgotten. These sprout into seedlings. With plenty of sunlight, rain, and nutrients, oak seedlings can grow more than 2 feet in a year.



Each female **bullfrog** lays nearly 20,000 clear, jellylike eggs. The eggs hatch in four or five days, but it takes more than a year for the tadpoles to turn into frogs. Tadpoles have gills and breathe water; adult frogs have lungs and can breathe air.

Newborn **deer** are as timid as lambs. When predators approach, fawns lie quietly, hoping to stay hidden. Once they grow antlers, however, their shyness disappears. Adult bucks fight other males, locking antlers and pushing each other to see who is stronger.



**Regal moths** lay tiny yellow eggs that hatch into caterpillars in about a week. As the caterpillars grow, they shed their skin five times and turn from bird-poop brown to Frankenstein green. Instead of spinning a cocoon, the caterpillars burrow underground in the fall. They emerge the next summer as regal moths.



Baby **tiger beetles**, called grubs, live in tunnels. They wait just below the surface for insects to wander by, then pop up, sink their jaws into the unlucky bug, and drag it underground to devour it. It takes one to four years for earthbound grubs to turn into flying adults.



# AWESOME OPOSSUMS!

by  
Matt Seek



Oppossums get no respect. Granted, they're not the most beautiful creatures. Their waddling walk and habit of getting pancaked on highways might lead one to believe they're dim-witted. The only time most people see an opossum is when they find one digging through garbage or trapped in a garage. But take a closer look at this curious critter, and you'll find opossums are actually awesome.

# A Face only a MOTHER COULD LOVE

Every day's a bad hair day for an opossum. Their beady black eyes, scruffy gray fur, and scaly pink tails make them look like overgrown rats. Opossums, however, aren't closely related to rats or any other rodent. Opossums are marsupials (*mar-sue-pee-uhls*), just like kangaroos and koalas. Marsupials raise their babies in a pouch, and in America, the only mammal packing a pouch is the opossum.

One reason opossums look scruffy is because they don't have thick, sleek coats like many Missouri mammals. They aren't able to put on much body fat, either, so they can't go long without eating. This means winter can be rough for an opossum. They often lose toes and the tips of ears and tails to frostbite because those parts aren't fur-covered.

## Furry FAKERS

Opossums usually scurry to safety if danger threatens. But when something catches an opossum by surprise, it bares its 50 teeth and hisses, trying to bluff its way out of danger.

If a predator refuses to back off, the opossum collapses, pretending to be dead. Its breathing slows. It slobbers, blows snot bubbles out its nose, and may even release a green fluid from its rear end that makes it smell worse than usual. Yuck! Most predators lose their appetite at this point and leave the opossum alone.

This behavior — called “playing possum” — is beyond an opossum's control. It just happens, like when a human faints. Opossums can play dead from four minutes to four hours.

Once the threat leaves, the opossum's ears begin to twitch, and it wakes up a few minutes later.



Noppadol Paethong

Oh, what a world!

© Ronald Wittek/dpa/Corbis



From left: Anthony Wilson/Photos.com; Cathy Clark aka CLCsPics/Flickr/Getty Images; Adam Larsen/Photos.com



## Built for the HIGH LIFE

An opossum's tail is prehensile (*pre-hen-suh-lē*), which means it can curl around things. Opossums can't hang by their tails except for short periods, but they do wrap their tails around branches for balance.

Opossums have thumbs on their feet! These special toes, called **halluxes**, are used to hold onto branches when climbing. Although they're not as nimble as squirrels — opossums plod rather than scamper — they're at home in the trees.

## Nature's VACUUM CLEANERS

Opossums are omnivores with a capital "O." These living, breathing vacuum cleaners eat anything they can find, including nuts, fruits, insects, worms, frogs, snakes, birds, eggs, rodents — even garbage and dead animals.

Opossums will happily gobble dirt, greasy burger wrappers, and plastic snack cake packaging. They produce chemicals inside their bodies that keep them safe from many germs. They're even immune to snake venom, so rattlesnakes and copperheads occasionally find themselves on the menu.



Jim Rathert

# Drifty GYPSIES

To an opossum, the world is an all-you-can-eat buffet. And when food is everywhere, it doesn't matter where you sleep. Opossums wake shortly after sundown and wander about, shuffling and snuffling for food to snarf. When the sun begins to rise, they bed down wherever they wind up, often in a tree cavity, squirrel nest, hollow log, brush pile, abandoned groundhog den, or under a house. Opossums use their prehensile tails to gather leaves for a bed.

## Live fast, DIE YOUNG

Opossums don't live long. Three-year-olds are rare; four-year-olds are almost unheard of. To make up for their short life spans, opossums don't waste much time before they start having babies.

Opossums find a mate about seven months after they're born. After a 12-day pregnancy — the shortest of any North American mammal — a mother opossum gives birth to six to 20 babies.



# Pouch POTATOES



© Konrad Wothe/Minden Pictures/Corbis

Newborn opossums are about the size of kidney beans — 10 could fit in a teaspoon. The babies crawl from under their mom's tail and make their way toward her pouch. Although the distance is short, the newborns are naked, blind, deaf, and have just two working legs. For them, the journey is a life-or-death race to find a space in the pouch, and some never cross the finish line.

Once inside, each baby clamps down on a nipple — mama opossums usually have 13 arranged in a "U" — and don't let go for nearly two months. While they nurse on mom's milk, the babies grow to chipmunk size.

The pouch is fur-lined — toasty! — and stretches as the babies get bigger. Mom can open the pouch to cool her babies when they're hot or clamp the pouch shut to keep her babies dry when it's wet.

Having a pouch allows mama opossums to stay mobile. They don't have to return to a den or nest every day — they carry their den with them.

## Mama MINIVANS

When the babies are about 2 months old, they crawl out of their fur-lined nursery. They're still not able to survive on their own, so the mother opossum becomes a four-legged minivan. The youngsters ride atop her back, clinging to fur as she forages for food.

While riding, young opossums learn survival skills, such as what to eat (everything) and how to avoid predators. Eventually the youngsters become too heavy to hitch rides. By this time, though, they're able to fend for themselves.





# WILD JOBS

## BIOLOGIST JEFF BERNINGER USES SPACE SATELLITES TO TRACK MISSOURI'S BLACK BEARS.

**Q: HOW DO YOU USE SATELLITES TO TRACK BEARS?**

**A:** We put special collars on the bears. The collars beam signals to a satellite in space. The satellite beams information to my computer to show where each bear is located.

**Q: HOW DO YOU GET A COLLAR ON A 300-POUND ANIMAL?**

**A:** First we have to catch it. We use traps baited with day-old doughnuts. Bears are smart, but their stomachs often overrule their brains.

**Q: WHAT DO YOU DO ONCE YOU CATCH A BEAR?**

**A:** We give it knock-out drugs, so the bear can't move or feel anything. It can still see, though, so we blindfold it, so it doesn't get stressed. Once the bear's out, we take all kinds of measurements, put on a collar, and pull a tooth.

**Q: OUCH! WHY PULL A TOOTH?**

**A:** We learn a lot from a tooth: how old the bear is, if it's healthy, and — if it's a female — how old she was when she first had cubs. Bears have plenty of teeth, and we pull one they don't use.

**Q: WHAT'S BEST ABOUT BEING A BEAR BIOLOGIST?**

**A:** In winter we track bears back to their dens. I crawl inside to give the bear knock-out drugs so we can replace its collar. It's great to see a bear again after following its life on my computer.

**Q: ISN'T IT DANGEROUS TO CRAWL INSIDE**

**A BEAR'S DEN?**

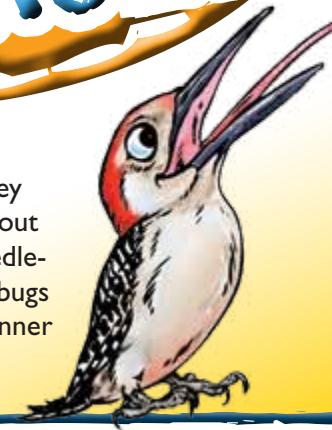
**A:** Most of the time bears are snoozing and don't know I'm there. Even so, I have someone hold my ankles, so if I wiggle inside and the bear doesn't like it, my partner can yank me out.

# STRANGE, but TRUE!

YOUR GUIDE TO ALL THE UNUSUAL, UNIQUE, AND UNBELIEVABLE STUFF THAT GOES ON IN NATURE

## Many WOODPECKERS

have crazy-long tongues that they use to probe inside hammered-out holes. The tongues also are needle-sharp — perfect for skewering bugs — and barbed at their tips so dinner can't slide off.



Now you see me. Now you don't. In the span of a few seconds, **GRAY TREEFROGS** can turn from bark-brown to leaf-green to match the color of their surroundings.

## A RACCOON'S

paw has 10 times more nerve endings than a human's hand. Raccoons use their super-sensitive digits to feel for food in murky water, unzip backpacks, and open picnic baskets.



Your parents probably warned you never to eat yellow snow. Well, don't eat other-colored snow, either.

## COTTONTAIL RABBITS

can tinkle pink, red, orange, or brown pee. The off-colored urine is caused by pigments in plants the rabbit has eaten.



## What does a COOPER'S HAWK

do after it catches dinner? It gives it a big squeeze. Unlike most raptors that kill with a bite from their beaks, Coops dispatch prey by clamping down on it — over and over if needed — with their needle-sharp talons.

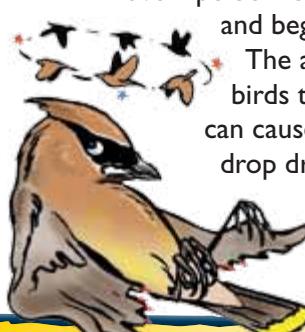


## SHORT-TAILED SHREWS

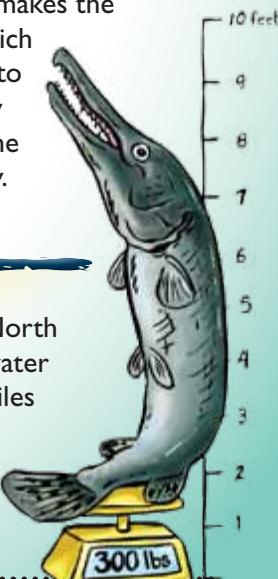
use venomous spit to paralyze prey. Although they typically eat insects, worms, and snails, each shrew contains enough toxic slobber to kill nearly 200 mice.

## CEDAR WAXWINGS

sometimes eat overripe berries that have fermented and begun to produce alcohol. The alcohol makes the birds tipsy, which can cause them to drop drunkenly from the sky.



The **ALLIGATOR GAR** is North America's second largest freshwater fish. Named for their toothy smiles and alligator-like snouts, these finned freaks can grow longer than your sofa and weigh more than 300 pounds!



# XPLOR MORE

## Snow Days

### Maze

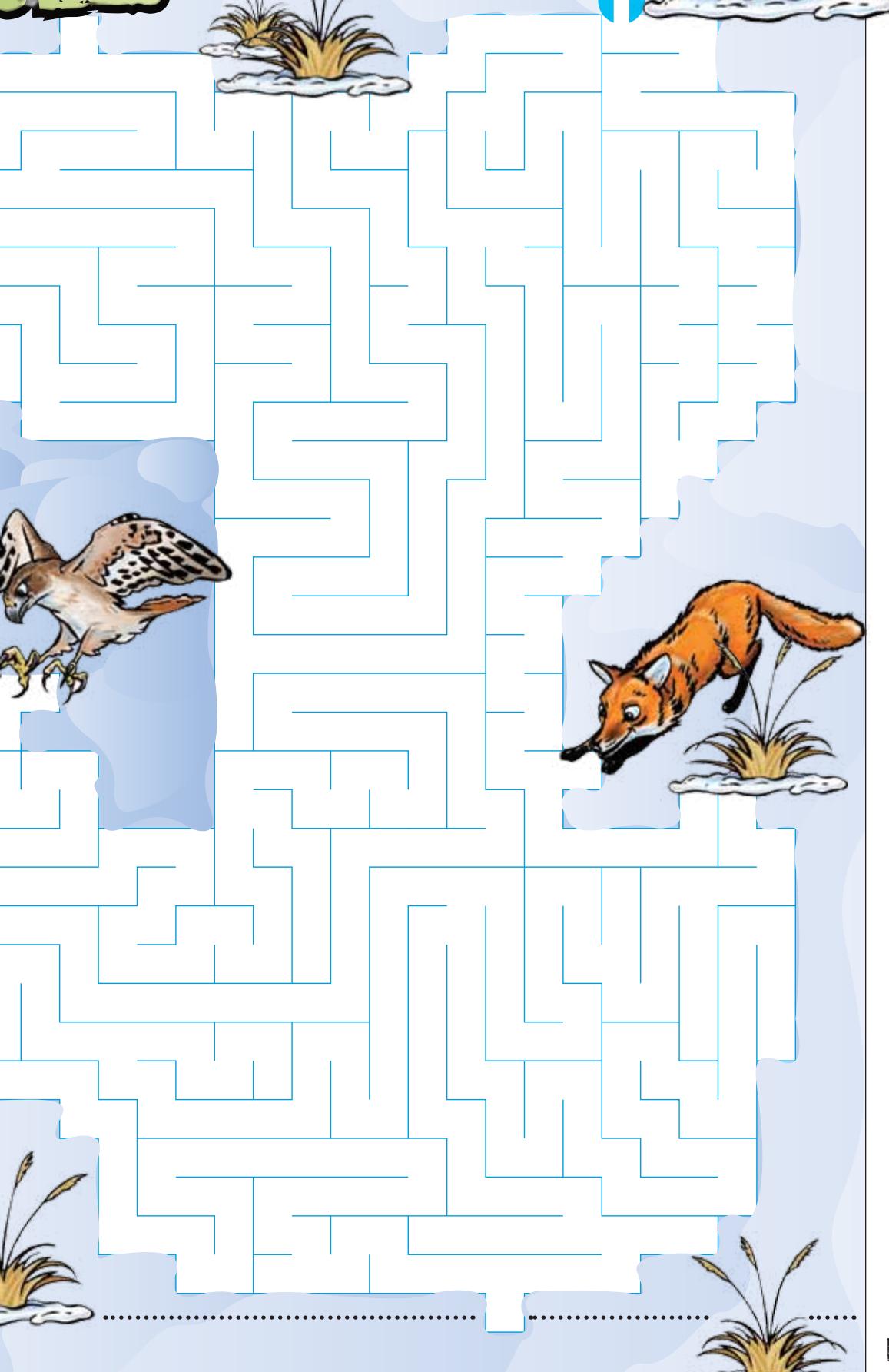
When snow falls, it doesn't fill every nook and cranny. Grasses, leaves, and other plants form a roof between the snow and soil. This real estate, below the snow but above the ground, is called the subnivean (*sub-niv-ee-uhn*) zone. Because snow is a good insulator, temperatures in the subnivean zone are often warmer than the outside air. The warmth nurtures a hidden world, home to a secret society of small, furry mammals. Voles clip grass to eat, building — mouthful by mouthful — tangles of slippery, silvery tunnels. Mice scamper along the vole-built roads, looking for seeds. Weasels and shrews slink in the shadows, hunting warm meat.



Can you lead this vole through the tunnels back to its nest? Watch out for hungry predators along the way!



RE



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ANSWER TO

**WHAT IS IT?**

FROM  
PAGE 1



In winter, chubby **groundhogs** (also called woodchucks) curl up in burrows for a five-month power nap called hibernation. During hibernation, a groundhog's heart beats only four times a minute. (If your heart beat that slowly, you'd never wake up.) Legend says if a groundhog sees its shadow on February 2, we'll get six more weeks of winter. Many groundhogs, however, snooze right through Groundhog Day. Groundhogs are also called whistle pigs because of their shrill call.